

Citation:

Kool B, Ameratunga S, Jackson R. The role of alcohol in unintentional falls among young and middle-aged adults: a systematic review of epidemiological studies. *Inj Prev*. 2009 Oct;15(5):341-7.

PubMed ID: [19805604](#)

Study Design:

Systematic Review

Class:

M - [Click here](#) for explanation of classification scheme.

Research Design and Implementation Rating:

POSITIVE: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

To appraise the published epidemiological evidence quantifying the risk of falls associated with acute and usual alcohol consumption among young and middle-aged adults.

Inclusion Criteria:

Epidemiological studies with an English language abstract investigating alcohol use as a risk factor for unintentional falls or fall-related injuries among individuals aged 25 - 60 years (or a subgroup within this age range).

Exclusion Criteria:

Studies including subjects in residential care, work-related falls, or studies of injuries limited to a specific body region (e.g. hip fracture, traumatic brain injury, maxillofacial injuries) were excluded.

Description of Study Protocol:**Recruitment**

- Research published from 1983 to 2007 was reviewed
- Data sources: searches of electronic databases (e.g. Medline, EMBASE, CINAHL, PsycINFO, Scopus), websites of relevant organizations, major injury journals, reference lists of relevant articles, and contact with experts in the field.
- Main medical subject heading and text words search terms included: accidental falls, accidents, home, alcohol, ethyl, BAC and alcohol drinking

Design: Systematic review. Studies were appraised using the GATE LITE tool.

Blinding used (if applicable): not applicable

Intervention (if applicable): not applicable

Statistical Analysis

Meta-analysis was not attempted due to heterogeneity of the eligible studies.

Data Collection Summary:

Timing of Measurements: not applicable

Dependent Variables

- Risk of falls: self-reported falls (injurious and non-injurious), emergency department visit or admission to a hospital for a fall-related injury, death as a result of a fall-related injury, and fractures as a result of falls

Independent Variables

- Acute and usual alcohol consumption: self-reported volume of alcohol consumption in the preceding 4 - 6 hours, blood alcohol concentration, breath alcohol concentration, self-reported level of drunkenness, and usual alcohol consumption

Control Variables

- Recreational drug use
- Fatigue
- Age
- Gender
- Socioeconomic status

Description of Actual Data Sample:

Initial N: 106 were identified from the search strategy and 54 were considered potentially relevant based on the title or abstract.

Attrition (final N): 8 studies fulfilled inclusion criteria, published between 1983 and January 2005. Sample sizes ranged from 118 to 19,582.

- 4 case-control studies
- 3 cohort studies
- 1 case-crossover study

Age: adults aged 25 - 60 years, mean age 47.4 years for studies reporting age

Ethnicity: not described

Other relevant demographics:

Anthropometrics

Location: United States, Finland, Sweden and Canada

Summary of Results:

Key Findings

- The proportion of fall subjects who had been drinking within 6 hours of the event ranged from 14% to 53%.
- In the seven studies reporting response rates, these ranged from 65% to 96%
- Acute alcohol use (within 6 hours of the event) contributes to unintentional fall risk, resulting in serious injury among young and middle-aged adults, and accounts for at least a three-fold increase in risk.
- However, the magnitude of this risk varied considerably across studies with most estimates being relatively imprecise.
- Modest evidence of a dose-response relationship with acute alcohol use was observed.
- The association between usual alcohol use and fall risk was inconclusive, and evidence of a gender difference was inconsistent.

Author Conclusion:

In conclusion, this review has been unable to precisely quantify the risk associated with acute alcohol use and unintentional falls among young and middle-aged adults. However, the findings of the review suggest that alcohol increases the risk of falls, although the magnitude of this risk remains uncertain. Sufficiently powered population-based studies conducted in settings that encompass a range of socioeconomic contexts are required to enable estimation of the fall injury burden attributable to alcohol. The multifactorial nature of falls requires the consideration of other potential contributing causes, confounders, and consideration of interactions between alcohol and factors such as fatigue and recreational drug use.

Reviewer Comments:

Authors note the following limitations:

- *Confounding was not adequately considered in a number of studies*
- *Some studies were compromised by the delay between measurement of alcohol consumption and measurement of outcomes, and gross measures of usual alcohol use, resulting in potential recall and other measurement biases*
- *The wide range of measures used to characterize usual alcohol consumption highlights the need for a consistent measure that can be used across countries*
- *There is insufficient evidence to conclude that there is an important association between usual alcohol use and fall risk in this age group*
- *Heterogeneity in research designs, variable definitions and study context made the meta-analysis of pooled data inappropriate in the present review*
- *Several studies were compromised by the lack of objective measures of acute alcohol exposure*

Research Design and Implementation Criteria Checklist: Review Articles

Relevance Questions

- | | | |
|----|---|-----|
| 1. | Will the answer if true, have a direct bearing on the health of patients? | Yes |
| 2. | Is the outcome or topic something that patients/clients/population groups would care about? | Yes |
| 3. | Is the problem addressed in the review one that is relevant to nutrition or dietetics practice? | Yes |
| 4. | Will the information, if true, require a change in practice? | Yes |

Validity Questions

- | | | |
|-----|--|-----|
| 1. | Was the question for the review clearly focused and appropriate? | Yes |
| 2. | Was the search strategy used to locate relevant studies comprehensive? Were the databases searched and the search terms used described? | Yes |
| 3. | Were explicit methods used to select studies to include in the review? Were inclusion/exclusion criteria specified and appropriate? Were selection methods unbiased? | Yes |
| 4. | Was there an appraisal of the quality and validity of studies included in the review? Were appraisal methods specified, appropriate, and reproducible? | Yes |
| 5. | Were specific treatments/interventions/exposures described? Were treatments similar enough to be combined? | No |
| 6. | Was the outcome of interest clearly indicated? Were other potential harms and benefits considered? | Yes |
| 7. | Were processes for data abstraction, synthesis, and analysis described? Were they applied consistently across studies and groups? Was there appropriate use of qualitative and/or quantitative synthesis? Was variation in findings among studies analyzed? Were heterogeneity issues considered? If data from studies were aggregated for meta-analysis, was the procedure described? | Yes |
| 8. | Are the results clearly presented in narrative and/or quantitative terms? If summary statistics are used, are levels of significance and/or confidence intervals included? | Yes |
| 9. | Are conclusions supported by results with biases and limitations taken into consideration? Are limitations of the review identified and discussed? | Yes |
| 10. | Was bias due to the review's funding or sponsorship unlikely? | Yes |

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